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BEAUTIFUL CLIMBERS OF INDIA

1. Ivy, decorating walls and a gateway

BEAUTIFUL CLIMBERS OF INDIA

By

B. P. PAL, M.Sc., Ph.D. (Cantab.), F.L.S., F.B.S., F.N.I.

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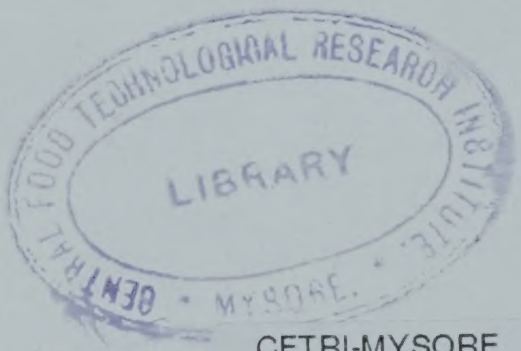

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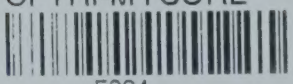

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Beautiful climbe..

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FOREWORD

Need for a well illustrated book on ornamental climbers which grow in India was felt for a long time. Apart from students and gardeners, there are a number of people building houses and planting gardens, who require guidance in the selection of suitable climbers. In their publication programme for books on horticulture and ornamental gardening, the Indian Council of Agricultural Research selected Dr. B. P. Pal, Director of the Indian Agricultural Research Institute, New Delhi, for this assignment. There could be no worthier choice for a book of this nature. Apart from being an eminent scientist, who has done outstanding work in evolving rust resistant wheats, his love for gardening is unbounded. A visit to his home in the Indian Agricultural Research Institute is indeed a treat. He has converted a drab official residence into a paradise of colour and fragrance. When his winter annuals and roses flower, indeed it is a pleasure to see his garden. He also grows a large collection of flowering climbers.

I am glad Dr. Pal in spite of his preoccupations with his scientific work, has been able to produce this beautiful book in his spare time. Profusely illustrated with paintings of ornamental climbers by the well-known plant artist Thakur Ganga Singh, and by colour photographs taken by H. K. Gorkha, Photographer of the Indian Council of Agricultural Research under the guidance of Dr. Pal, it is a worthy addition to the scanty literature on garden plants of India. Written in a simple language avoiding technical jargon, this book will be particularly welcomed by people who want guidance in the selection of climbers for their home gardens and also by garden lovers in general. I hope it will be of a considerable help to all those who are interested in the ornamental climbers which grow in this country.

New Delhi
January 23, 1960

M. S. Randhawa, D.Sc., I.C.S.

PREFACE

Climbers have been known and valued in India for ages. In Sanskrit literature and in the epics of Kalidasa there are numerous references to creepers adorning not only the pleasure gardens of emperors and kings but also the hermitages of saints and *rishis*. In modern times, the resources of the plant world have been exploited much more thoroughly than in the past, for the enjoyment of man. However, although climbers find a place in books on gardening along with shrubs and other plants, there is no book available in the country which is devoted exclusively to these beautiful plants. It is hoped that this small volume, which is written for the lay gardener and not for the botanist or the specialist, will fill a need.

The number of climbers which have been included is small compared to the rich wealth of varieties which is available in different parts of the world. But it seemed desirable that in a first book of this kind, the selection should be limited to climbers which are readily available in the country itself and about which the writer had some personal experience. Merely to cull out descriptions of some of the lovely forms available in other climes would have been inappropriate. But it is hoped that this brief account of some of the beautiful climbers already available to the garden lovers of this country will result in an increase in interest, in a demand that our nurseries should maintain a better stock and a wider range of varieties so that one may be able to choose therefrom what exactly is required for one's garden.

This book has been prepared at the suggestion of Dr. M. S. Randhawa, Vice-President of the Indian Council of Agricultural Research, who is not only a noted authority in the fields of Botany and Agriculture but also well-known for his love of beautiful trees and other ornamental plants. But for his unfailing interest, constant encouragement and assistance,

its completion would not have been possible. The writer's deep gratitude is therefore due to him. The writer also wishes to express his indebtedness to Dr. H. K. Jain for valuable assistance in the preparation of the manuscript. He also wishes to thank Mr. H. B. Singh, Dr. S. P. Kohli, Mr. S. Ramanujam, Dr. A. T. Natarajan and Mr. Romesh Chander for assistance in several ways. He is also grateful to Dr. N. L. Bor of the Royal Botanic Gardens, Kew, for checking up the Latin names of a large number of the climbers described in the pages that follow.

Most of the photographs were taken by Mr. H. K. Gorkha of the Indian Council of Agricultural Research and have been reproduced with the kind permission of Dr. M. S. Randhawa. One photograph was taken by Mr. Ranjit Singh while the picture of *Wistaria sinensis* was kindly made available by Mr. K. Mori through the good offices of Dr. S. M. Sikka. The paintings by Mr. Ganga Singh which are also included were made available through the kindness of Dr. Randhawa I am indebted to Mr. N. S. Bisht for assistance in designing the cover and in the layout.

Finally, the author wishes to express his deep gratitude to the Indian Council of Agricultural Research for providing the opportunity and facilities to write this book.

New Delhi
January 23, 1960

B. P. Pal

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INTRODUCTION

A traveller wandering through the green forest may suddenly come across a brilliant patch of colour; some climbing plant with beautiful flowers is displaying its beauty. Or a person walking through the forest of bricks, stones and cement which constitute our towns may come across a building, relieved from the commonplace, by a beautiful climber planted at an appropriate spot. It has been said by some cynic that whilst a doctor can bury his mistakes, an architect can only cover his with creepers. However, it is not only the occasional lapses of the builder which need the help of a charming climber, but well-designed houses also can have their beauty enhanced by the planting of a few carefully chosen climbing plants which will literally provide cascades of colour.

This small book is intended primarily for the gardener and the plant lover who does not wish to bother with a lot of technical detail. In many cases a large number of species and varieties exist and there is a great deal of confusion about the names. Many pages can be written explaining why certain names have been preferred and certain others left out. The object in the present case, however, is to present only such information as is likely to be of interest and help to the lay gardener. He would like to know as to which are the best varieties and how to grow them to perfection. The latter is a task which it is difficult to give advice about. There is unfortunately very little published information regarding the behaviour of particular plants under different conditions. For instance it makes quite a lot of difference to a climber whether it is grown on the side of the house facing north or south or east or west. Very few persons have experience of having grown a large collection of climbers under varying conditions of light, temperature and humidity. What is given in the following pages is, therefore, a summary, a crystallization of

the author's experience with a limited number of climbers, helped out by observations from friends in different parts of the country.

The function of the stem in the life of a plant is partly mechanical. It helps in the transport of water and mineral substances, and no less important is that it enables the leaves to be exposed to sunlight, which is very essential for the synthesis of carbohydrates, the basic food for all plants. This latter function, the stem is able to perform, by virtue of the fact that in most plants, it is strong, stiff and erect with well-spaced branches arranged on both sides.

A strong stem structure in the higher plants thus appears to be entirely consistent with the role assigned to it. The process of evolution however, is not always guided by a cold logical approach; indeed many people wonder, in view of the randomness of gene mutations, whether it is guided by any approach at all. In one way, however, it is good that it is not, for how else would there be so much diversity of plant and animal life, which has provided variety, the most potent antidote to a monotonous existence?

Among the products of the evolutionary process are the weak-stemmed plants, which in spite of their obvious handicap, manage to survive because of the very ingenious adaptations they have developed. Many of these plants have taken to a climbing habit, by means of special structures or by a modified behaviour of the existing ones. These climbing plants or climbers are variously described, depending on the precise manner in which they achieve their object.

They are described as climbers proper when the plants are endowed with special structures which on coming into contact with an object attach themselves to it and in this way provide the necessary support for the plant to climb. These special organs may be tendrils, modified leaf-stalks, rootlets or hook-like thorns. The tendrils are formed by the modifications of various plant parts such as the terminal portion of branches in *Antigonon leptopus* or one of the leaflets in *Bignonia*, leaf-tips in *Gloriosa* or stipules in *Smilax*. In *Clematis*, the spiral

leaf-blades provide the necessary support for climbing. In *Bougainvilleas* thorny structures on the woody stem help the plant in taking the necessary grip.

Climbing plants are described as twiners when in the absence of any special organs for support, they twine themselves spirally around another plant or some other object; known examples of this behaviour are met with in *Hiptage* and Honeysuckle.

The name rambler in the gardening terminology is usually reserved for those climbing forms of roses which produce large clusters of small flowers. In a more general sense, the terms rambler and straggler apply to those plants which do not quite succeed in their efforts to climb but manage to spread around, supporting themselves on stems and branches of other plants. *Quisqualis indica,* the Rangoon Creeper, is a good example. The scramblers, on the other hand, are those plants which manage to raise themselves up after repeated falls. The dog-roses are described as scramblers.

Another group of climbing plants are called creepers because they are too weak to rise vertically above the ground on their own. A good example is the Morning Glory. The trailers are not much different from the creepers. The only difference is that they are unable to root at their nodes. In America the term vine is often used to denote any type of climbing plant.

CHAPTER I

VARIOUS TYPES OF CLIMBERS

SHOWY, FREE-FLOWERING CLIMBERS

This class of climbers generally appeals most to the average person. These are the plants which display such a blaze of colour at certain times of the year that one's attention is compellingly fixed on the beautiful sight. The flowers may be small or large; they may be bell-shaped and symmetrical or they may sometimes even take fantastic shapes, but if the climber is worthwhile, there will be masses of flowers! Most of the climbers which are described in this book fall into this category. Thus there is a large selection to choose from, although the averge person is quite unaware as to how rich is the variety of beautiful climbers which nature has provided.

CLIMBERS FOR FOLIAGE

Just as some trees and shrubs and pot-plants are prized for their foliage so also there are some climbers which are grown only because of their beautiful leaves, the flowers in this case being insignificant. Visitors to colder countries will recall what an important part the Ivy plant which creeps along the walls of houses, mansions, and castles plays by providing an attractive verdant cover in summer ; and in autumn the leaves change their colour, assuming the most beautiful shades of red. In the tropics also there are some very striking climbing foliage plants. One of these is *Monstera deliciosa* which has enormous leaves with curious holes in them and the fruit is said to be very finely flavoured if partaken when fully ripe. Another and more familiar plant is the so-called Money Plant, *Pothos*. This has variegated leaves *i.e.* some parts of the leaves are green and some parts are white or creamy in colour. The plant grows very easily and can also be grown indoors. Yet another familiar foliage plant which

can be trained up the trellis is the *Asparagus*. Many people know *Asparagus* as a vegetable, but there are species of it with beautiful foliage which are quite ornamental.

CLIMBERS WITH SCENTED FLOWERS

Some climbers are favoured for their handsome appearance, and some others for their scent. But some are fortunate to possess both beautiful flowers and also delicious fragrance. One can choose a climber that will not only beautify a verandah, but also fill the adjoining portion of the house with a lovely scent. Amongst these are some of the climbing rose varieties such as the beloved old yellow variety, *Marechal Niel*, the Honeysuckle, and *Trachelospermum jasminoides*. Again we have in the climbing Jasmines, plants with some of the most fascinating odours in the plant kingdom. In the descriptive table of climbers given at the end of the book, special mention is made of the fragrance of certain climbers in order that this attribute may be availed of by garden lovers.

CLIMBERS FOR SHADY POSITIONS

Most climbers like to grow in full sunshine and produce their best flowers only if they have plenty of light. It often happens, however, that one may wish to plant a climber in a situation which is partly or fully in the shade. Fortunately there *are* a few climbers which can thrive under such conditions. For positions which are continually in the shade, one of the best climbers is *Trachelospermum jasminoides* with its neat foliage and myriads of deliciously scented, small, white flowers. At places which receive partial sunshine certain climbers like *Clerodendron splendens* do quite well. *Jacquemontia pentantha* is another climber which can be grown under such conditions. In fact it is an advantage to grow this and also certain of the blue *Ipomeas* in places where only a limited amount of morning sunshine is received. Under these conditions the flowers remain open longer and also do not take on quickly the somewhat reddish tinge which affects the fine blue of the flowers later in the day.

LIGHT AND HEAVY CLIMBERS

There is quite a lot of difference in the amount of growth which different climbers can make. While on the one hand there are some which remain small, there are others which attain truly gigantic proportions. Some of the *Wistarias* for example can cover great stretches of a wall. Those who have visited the well-known Safdarjung Tomb in New Delhi in winter, may have been impressed by the way the beautiful climber, *Pyrostegia venusta*, with its enormous trusses of orange-coloured flowers has completely covered the outer walls. While these climbers grow extensively under favourable conditions, it is also possible to use them where space is more limited by pruning and trimming of the plants from time to time.

For those who wish to have very small-growing climbers, the common *Nasturtium* has a climbing form which can go up several feet and is very ornamental. The Morning Glories and *Mina lobata* also take up very little space if the sowing time is adjusted. For instance, in the plains if they are sown in July they will make extensive growth before they flower in the early winter or even earlier, but if the sowing is delayed until the end of August or early September, they will only grow a few feet and then produce their flowers.

Information on whether a climber can be classified as light or heavy is given elsewhere in order to help in the selection of suitable climbers for particular positions.

CLIMBERS WITH BERRIES

Some plants produce a large number of fruits after flowering, which in some cases may be as ornamental as the flowers themselves. In cold climates, some of the wild rose species which are now grown in gardens produce richly-coloured "hips" as the fruits of the rose are called. Most of the climbers, however, which are grown in India do not possess such an attribute.

WILD CLIMBERS

Our garden plants have come to us originally from the wild flora which existed in different parts of the world.

Some of them have been directly taken from the wild state, and without further change have been adopted by man to add to the beauty of his garden. Others, however, have been subjected by plant breeders to considerable selection and hybridisation to produce yet newer forms, sometimes of exceeding beauty. Travellers in the Himalayas will come across some wild roses like *Rosa moschata* which can climb up trees and present a very striking effect. Wild species of *Clematis* and some other climbers also occur. In the forests and jungles of the plains also there are a number of climbers which are found growing wild. In the present book, however, no special mention of these has been made since the climbers which are considered most worthwhile have been included whether they have come directly from nature or whether they have been improved at the hands of man.

ANNUAL CLIMBERS

Many climbers grow and persist for a number of years: these are the perennials and they are valued because once they have established themselves, they do not need very much care. On the other hand, there are climbers which grow and flower and complete their life-cycle within a year; these annuals have their place in the garden too. For quickly making gay a small space of trellis or a bare wall, and for covering unsightly objects it is difficult to find anything better than some of the *Ipomeas* (or *Pharbitis*) which are raised from seed and grow quickly. Some of them can persist, even beyond a year, if they are allowed to do so; but they appear to wear themselves out during the first year and better results are obtained by growing from a fresh lot of seed each year.

OTHER CLIMBERS

Some of the climbers well-known in temperate regions appear to be absent or little known in this country. They do not appear in the lists of our nurseries and if they have been introduced at all, they will no doubt be found in the garden of some flower lover who took the trouble of going through

the rather tedious procedure which is entailed in importing plants. Although such climbers may not be suitable for the tropical parts of the country, they should certainly do well in our hill stations and some areas in the Deccan tableland. Amongst the better known flowering climbers the following may be mentioned.

Hydrangea petiolaris. The small garden-shrub-form of *Hydrangea* is familiar in this country but not this unusual and artistic vine. It grows quite ' woody ' and clings specially to brick or wooden walls. It does not require any special support; it can also be grown on old trees and stumps. The height varies from 10 to 20 feet, depending on the pruning.

The dense, deep green foliage is attractive and so are the characteristic fragrant creamy-white flowers. The flowers however are not in the form of rounded heads as in the common *Hydrangea* but consist of flat " plates " held out horizontally and exceedingly attractive.

Polygonum auberti. Also known as the Silver Lace Vine, this is a rampant grower and blooms over a long period.

Euonymus radicans vegetus. This will grow to about 20 feet and is effective on brick, stone or stucco. In addition to thick lustrous dark-green evergreen leaves, the clusters of orange-coloured berries are both striking and decorative.

There are many others that could be listed but these examples will indicate what a wealth remains to be tapped by garden enthusiasts in India.

CHAPTER II

HOW TO GROW CLIMBERS

Unfortunately it is not possible to give general directions as to how to grow climbers to perfection. Whilst there are some things that many climbers need in common such as plenty of sunshine, a good well-drained soil, an adequate amount of water and so on, yet each species, one may even say each variety, has its own special likes and dislikes. Some climbers will put up with shade, or with too much or too little water, or flourish even on poor soil, but it is difficult to give information in general terms, which can be successfully applied to a particular plant. Therefore, in this book the information that is available has been given along with the description of the climbers in the pages later on.

The successful growing of climbers, however, does not consist merely in growing the plants well, and giving them conditions under which flowering will be profuse, but adequate attention must be given to the position of the climbers in the garden. If they are planted, mixed up with all kinds of things, the effect may not be very happy. There must be an attempt at harmonising the climbers with the buildings and other garden plants. Sometimes two climbers can be allowed to intertwine to create fascinating masses of contrasting colours; for instance the *Petrea* can be so grown with certain varieties of *Bougainvillea*. Planting a vivid majenta purple *Bougainvillea* in a small garden, however, would tend to " kill " the colour in the annuals and smaller shrubs in the garden.

Many climbers do not require much attention after they have grown except removal of dead or diseased branches and occasional trimming. However, certain types such as the climbing roses and the rambler roses require annual pruning to ensure the best results. Hints on pruning are given at the appropriate places.

ARCHES, PERGOLAS, PILLARS AND TRELLISES

One way of growing the climber is to let it go up a tree. This does not entail any special provision of climbing aids to the plant concerned. Often, however, climbers are grown against the walls of buildings, or on specially constructed arches, pergolas, trellises and similar structures. For climbing against the wall, some of the climbers do not need any help: for instance in the case of *Campsis chinensis* and *Trachelospermum jasminoides*, little roots appear wherever the climber touches the wall and which fix themselves tenaciously to the surface. Other climbers however may require some lattice work or some wire-mesh suitably fixed to the wall, to assist them in climbing up and preventing them from being hurled down during storms or in squally weather.

Arches in various shapes and sizes, pergolas and arbours, are distinctly ornamental and eminently suitable for the planting of well chosen climbers. The garden lover can exercise his imagination in designing special types of these structures in order to beautify his garden. These can be built of various materials including iron, concrete, wood, bamboos, etc. It is not at all necessary that the arches and pergolas should be finely finished in construction. For instance, wooden arches using irregular rough pieces of wood can create a charmingly rustic appearance. The pillars which support the gates can also often be made more interesting by clothing them with a suitable climber. Some of the roses are called pillar roses because of their suitability for such a purpose. These roses are climbers, but their spread is limited so that they make just enough growth to cover an average-sized pillar. In the plains of India, *Bougainvilleas* are often used for this purpose, quite effectively. However, there is a tendency to use only one or two of the old varieties whereas nowadays there is such a wealth of new varieties to select from.

SELECTION OF CLIMBERS

Each one has his own favourite flowers. So is the case with climbers. Some prefer a climber that catches the eye with a

startling colour; others may prefer a modest-looking type with sweetly scented flowers. The experienced gardener takes into account not only the flowering propensities of the plant but also such factors as the attractiveness of the foliage, the freedom from pests and diseases, and so on. Also, as mentioned earlier, the climbers selected must be in harmony with the rest of their background. Thus, some of the *Bougainvilleas* in strong shades of purple and majenta are seen to the best advantage in a park or in the background of a large garden. Again a climber like *Aristolochia grandiflora* which has evil-smelling flowers should be planted in a place where it will not offend. Where a number of climbers are to be grown, there is an opportunity to display one's taste. Climbers with flowers of similar shades can be planted or, alternatively some pleasing contrast can be provided. To assist in the selection of climbers, a table has been given at the end of the book. It gives at a glance some of the salient features on which information may be desired.

Amongst my personal favourites I would mention, for the plains, *Clerodendron splendens*, which literally becomes a living curtain of scarlet-crimson flowers in the cold weather while during the rest of the year its handsome foliage is an added beauty, and *Petrea volubilis* with lovely masses of starry soft purple flowers; also the new bougainvillaea *Mary Palmer* with its mixture of red and white branches which is so profuse in flowering. In the hills rambler roses such as the old favourite, *Dorothy Perkins*, add to the beauty of the porch; where one has more space, the *Wistaria* is certainly something almost out of this world, when in bloom.

CHAPTER III

DESCRIPTION OF SOME IMPORTANT CLIMBERS

Adenocalymma allicea

A. allicea like the well-known *Bignonias* to which it is closely related is a climber of surpassing charm which finds a ready welcome everywhere because of its refreshing evergreen foliage and enchanting masses of exquisitely coloured flowers. The two together harmonise to produce a spectacle which is at once ravishing and full of splendour. The flowers are a most glorious shade of pinky-mauve in colour and trumpet-shaped as in many *Bignonias*. The leaves, arranged opposite each other, are each divided into two twin leaflets. One should avoid bruising the leaves, for then they give out a garlic-like odour! The species *A. calycina* has yellow flowers.

From its original home in Brazil, the genus *Adenocalymma* has migrated to many parts of the world and in India it is very widely distributed. The plant thrives on a rich loamy soil in hot and moist conditions. Commonly propagated by layering, the cuttings also root when planted in a sandy soil.

Aganosma caryophyllata (*Echites caryophyllata*)

A. caryophyllata is an attractive twining shrub, very free growing and much valued for its abundant mass of white flowers produced during the early rainy season. Its capacity for quick growth makes it most suitable for training on large trees. The flowers are delightfully fragrant, usually described as clove-scented, and their irregularly twisted petals are their most characteristic feature. The leaves in *A. caryophyllata* as in other species are oppositely arranged and are conspicuous for their veins which are reddish in colour.

A. caryophyllata had its origin in tropical America from where it has spread far and wide. The plant is easily propagated from seeds and by means of layers. It should not be

watered frequently as it is best adapted to flourish under dry conditions.

Allamanda cathartica

Allamanda cathartica is a very popular and colourful plant, prized both for its large yellow flowers and bright green, narrow pointed leaves arranged in whorls of four. The corolla, tubular at the base and funnelled above into five lobes, has its beauty further enriched by the orange streaks lining its inside. Flowering throughout the year, although to perfection only in the hot and rainy summer months, the plant attains a good size and can be grown to advantage either as a garden shrub or as a climber to adorn the verandah with its many attractive flowers.

The native land of *A. cathartica* is tropical America from where it has spread far and wide and is now grown in all tropical or sub-tropical parts of the world. The plant shows best growth in a mixture of fibrous loam (3 parts) and wood charcoal (1 part), and responds well to heavy manuring during the growing season. During this period, it also requires a lot of watering with free drainage. It is easily propagated by cuttings and layers. When grown in pots it should be re-potted every year, pruning the shoots in winter to a manageable size.

A number of varieties of *A. cathartica* are available, although some of these such as *schotti* and *nobilis* which are among the best known have sometimes been accorded the status of synonymous or separate species. The varieties differ mostly in the growth habit of their plants and the size of their flowers. One very commonly grown, apart from *schotti*, is *nobilis* because of its capacity for prolonged flowering over a period of months. The flowers of this variety are noted also for their fragrance. *Grandiflora* has superb large yellow flowers.

Another species of *Allamanda* which deserves mention because of its distinctive colour of flowers is *violacea*. The roots of this slender-growing climber however develop very poorly and for this reason it is usual to graft it on the *schotti* variety.

Antigonon leptopus

SANDWICH ISLAND CLIMBER

A. leptopus must be considered an ideal climber, for few plants produce such lovely sprays of rose-coloured flowers with such a reckless abundance. The flowers which brook few rivals in their extravagantly colourful effect, are produced throughout the summer months particularly with the onset of the monsoon. A second shower of inflorescences makes its appearance in the early winter months. The branches bearing the blossoms in an acropetal succession, arise opposite the alternately arranged leaves and each terminates in two or more hook-like structures which help in climbing. The flowers are unorthodox in their form, each constituted of a perianth divided into five petal-like parts, the outer three more prominent than the two inner ones. The leaves, triangular and deeply clefted at the base, have a wavy margin and very conspicuous veins on their lower side. The plant is trained with best results on arbours, pergolas, fences or trees.

Antigonon guatemalense has rose-coloured flowers, double in appearance. There are also species or varieties available with pure white flowers, or white flowers which turn to pink on fading, giving a charming effect of pink and white; and deep carmine red.

Originally from South America, *A. leptopus* has found new homes in India and in other warm regions of the world. A good loamy soil not too rich in manure suits it well. The plant is deciduous and careful trimming is necessary after the blooming period is over. New plants are readily raised from seeds and once established they develop a tuberous root which puts up new growth with the end of the winter season.

Aristolochia elegans

CALICO FLOWER

A. elegans true to its name, is a neat and delicate climber whose major attraction lies in its curiously-formed flowers

which are obviously so designed to facilitate pollination by insects. The popularity of this particular species is due mostly to the fact that unlike others, it is completely free from the repelling odour which is so characteristic a feature of the genus *Aristolochia*. The flowers large and showy are formed of a tubular perianth of yellowish green colour, which curving sharply upwards, opens out into a beautiful cup-shaped structure with a radius of just under two inches. Adorned with purple veins on its whitish outside, the cup has its deep purple interior superimposed by a lovely pattern of irregularly drawn white markings. The fruits which resemble hanging baskets are interesting. The leaves like the flowers are borne on long stalks, and as broad as long, they are more or less heart-shaped. Blooming in the rainy season, the plants which are tall of stature, are best trained on trellises.

Natives of *S. America*, *Aristolochias* have almost a world-wide distribution. Many species of *Aristolochia* have curiously-shaped flowers and are known by such names as Dutchman's Pipe, Pelican flower, Swan flower, Goose flower and Duck flower. But the unpleasant smell of most species bars them from a place in the garden. Mention must however be made of *A. grandiflora*, the largest-flowered species which has numerous, inflated flowers provided with a tail three feet long. The plant thrives in a rich loamy soil which would permit free drainage, and can be propagated easily from seeds, cuttings, layers or suckers.

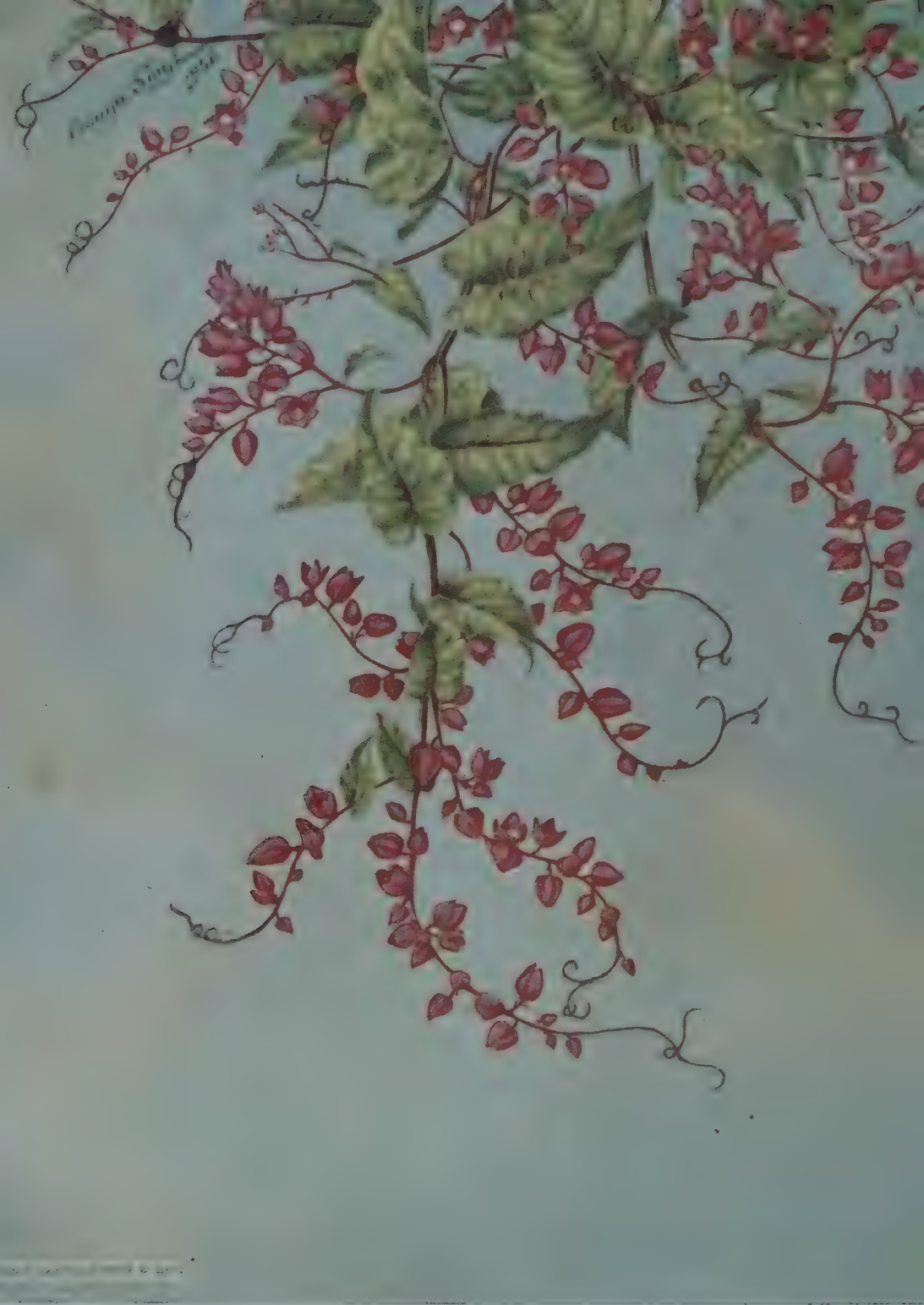
Banisteria laevifolia

A shrubby climber, *B. laevifolia* is remarkable for its golden-yellow flowers which, occurring in close clusters, cover the plant during the late winter months, make it an object of great beauty. The plant grows freely, producing many branches with oppositely-arranged leaves, having a pigmentation which is generally described as olive-green. The flowers, small individually, depend for their showy effect on their close aggregation on a short axis. Three such axes, one terminal and two axillary are further grouped together. Each

2. Adenocalymma allicea

3. Aganosma caryophyllata

4. Allamanda cathartica var. *grandiflora*



5. *Antigonon leptopus*

of the golden-coloured petals is divided into a narrow basal part and a roundish upper portion with the margin reflexed upwards, forming a hollow in the middle. Each leaf consists of a short stalk and a large blade which is stiff in texture and elliptically round in shape.

B. laevifolia is a native of tropical America but its present distribution covers almost all tropical and sub-tropical parts of the world. The plant requires a soil permitting free drainage and a mixture of loam, sand, leaf mould and peat is therefore generally used. It is easily multiplied by cuttings taken from ripe wood and planted in a sandy compost.

Beaumontia grandiflora

NEPAL TRUMPET CLIMBER

Beaumontia grandiflora is a large, evergreen, shrubby twiner capable of climbing to great heights and covering a large area. It can be grown as a garden shrub by occasional pruning or trained on a wall; with its large lily-like white flowers which occur in groups of varying size, it presents a strikingly beautiful sight. The plant is characterised by very rapid growth, a fact which along with the free flowering habit, accounts for its huge size and showy appearance.

The flowers of *B. grandiflora*, with their faint fragrance and large white trumpet-shaped corolla having a splash of green towards the base, are produced in great abundance during the late winter months. The leaves which are oval in shape and crisp with a clear margin are arranged in twos, opposite each other, on a thick woody stem.

A native of Eastern India, *B. grandiflora* is now commonly grown all over the country. It is sometimes seen climbing up tall trees. Lancaster has remarked that when it goes up the silk cotton tree, the combination of the large red bell-shaped flowers of the latter, with the white trumpet-shaped flowers of the *Beaumontia* is " a sight for the gods."

It is not very sensitive in the matter of its soil requirement but must be exposed to full sunlight, if necessary by thinning

out the leaves. It is usual to plant it in a rich loamy soil and after flowering has been completed, pruning is done to encourage fresh growth for the next year. Propagation is done by means of cuttings, layers and seed.

A second species of *Beaumontia*, which one sometimes finds in Indian gardens is *B. jerdoniana*. This has somewhat smaller flowers, which however, are produced in very large numbers, making the plant extremely attractive.

The Bignonias

The Bignonias, using the term in the horticultural sense, include some of the most magnificent tropical climbing plants. The leaves are compound and the terminal leaflet is often represented by a tendril.

Pyrostegia venusta (also called *Bignonia venusta*) well deserves its name of " the Golden Shower ". This ever-green climber can cover a vast space, and when it blooms in the cold weather, the leaves are completely hidden by the enormous pendular trusses of rich orange-yellow tubular flowers. Indeed it is one of the most showy of the flowering plants and a most glorious sight when in full bloom.

The original home of *P. venusta* is Brazil, but it is now grown in gardens throughout the tropics. The plant is not very exacting as to its soil requirements, but a good fibrous loam suits it admirably. Well-rotted farmyard manure may be added occasionally. The plants should not be allowed to dry since they love moisture, but at the same time drainage should be good so that there is no water-logging. In India, the plant is not usually attacked by any serious disease or pest and its cultivation is relatively simple. This climber is easily propagated by cuttings.

The plant flowers to perfection when it receives full sunshine. Good examples of *P. venusta* can be seen in the gardens of Rashtrapati Bhavan and on the walls of Safdarjung's Tomb in New Delhi.

About half a dozen species of *Bignonia* are fairly commonly grown in Indian gardens. Of these species, mention must be

made of *B. purpurea* (the name has now been changed to *Clytostoma binatum*) which has lovely, purple, scented flowers and blooms several times in the year. This climber is not too heavy and can be suitably grown on a trellis or along the wall of a house.

A number of other species which formerly were placed in the genus *Bignonia* and now variously classified, almost rival *P. venusta* in the splendour of their beauty. Foremost among them are *Doxantha unguis-cati* (formerly *B. gracilis*), *Clytostoma callistegioides* (formerly *B. speciosa*) and *Arrabidaea magnifica* (formerly *B. magnifica*). All three are magnificent climbers, extensive in their growth and profuse in their flowering. The first produces gorgeous pale yellow flowers during the hot summer months, the second bears blossoms which are yellowish with a lilac tinge while large mauve to purple red flowers cover the third in the cold winter months. They make an excellent cover for bare stone walls.

The Bougainvilleas

Of all the climbing plants which grow in our part of the world, the *Bougainvilleas* are perhaps the most brilliant and spectacular. A *Bougainvillea* in full bloom is a sight to be remembered. For sheer richness and exciting variety of colour and for profusion of flowering they are a class apart. The colour range has been greatly increased as a result of breeding work. Apart from the familiar mauves and purples, white, golden orange, and brick-red shades are to be found. Some of the glowing scarlet forms are as colourful as hot chillies drying in the sun or the cloaks of bull-fighters in Spain. Free growing though not too free to become coarse and dense with foliage, the plants produce a smother of flowers on the long, usually woody branches in the axils of alternately arranged leaves. The strikingly colourful petal-like structures in these plants are in fact the three bracts which enclose within them the not so conspicuous tubular pale-yellow perianth and the rest of the floral parts. One such flower is attached to the base of each bract. The flowers continue to be produced, in

many varieties, almost throughout the year, though with a greater lavishness during the dry periods. The leaves in *Bougainvillea* are simple in form, mostly round or oval with a pointed tip and having a short stalk.

Grown in a variety of ways, such as pot plants and standards and also as hedges, with remarkably good effects, the *Bougainvilleas* are however at their very best as climbing shrubs, which is the way they are found in their native land of South America. Trained over arches or pergolas, the roof or the back wall, porches or arbours or on neglected tree trunks, they flaunt their beauty with great advantage and with a total lack of inhibition. It is well to remember however that their brilliant shades, especially the purple and magenta-coloured types, dominate over everything else in the neighbourhood and therefore the choice of a suitable site requires careful consideration.

There is great confusion regarding the number of *Bougainvillea* species and varieties and I have been in correspondence with Prof. Holttum, Colonel Symon Jeune and others who have been studying the *Bougainvilleas*. However, four species *B. buttiana*, *B. glabra*, *B. peruviana* and *B. spectabilis* appear to have provided all the varieties and hybrids which are now so commonly grown in India and in other parts of the world. A description of these species has been given in recent years by Prof. Holttum, among others, and is briefly as follows:

B. buttiana: plants of this species are climbing shrubs which produce their flowers in the terminal parts of the branches. The floral bracts are non-pointed at their tips and crimson in colour, which changes to magenta with age. The leaves on the main stem are very large in size and the spines very conspicuous. The plant loses its hairs with age.

The species *B. buttiana* is in fact a hybrid between *B. glabra* and *B. peruviana*; experimental evidence in support of this has been presented by Prof. Harland. The best known representative of this species is the variety *Mrs. Butt* which has a very interesting history.

6. Aristolochia grandiflora

7. Banisteria laevifolia

8. Beaumontia grandiflora

9. Pyrostegia venusta

" This well known variety appears to have been obtained by Mrs. R. V. Butt from Colombia in 1910. It then spread. It appears to have reached Europe after the First World War and India about 1920."

Another popular variety in which the actual flowers are malformed is the *Scarlet Queen,* commonly grown in this country. Mutant forms having orange bracts fading to pale mauve have originated both from *Mrs. Butt* (*Mrs. McLean, Louise Wathen* and *Orange King*) and *Scarlet Queen.*

B. glabra: This climbing species produces clusters of flowers with variously-toned magenta-coloured bracts which are pointed at their tips and covered with a net-work of veins like those of *buttiana.* The leaves in this are elliptical in form and with very minute hairs, the spines on the branches are short and not so conspicuous as in *buttiana.* The plant is very commonly grown in India and continues to be in bloom almost throughout the year. Some of the best known varieties of this species are *Snow White* (also called *Snow Queen*), *Formosa, Cypheri, Sanderiana* and *Magnifica.* The first has white bracts, and is much prized as a novelty, being of recent introduction; the second is of a pale glistening mauve colour while the others are various shades of magenta. *Sanderiana*, the common European variety, but also grown in the East, is noted for its immense capacity for flower formation. *Magnifica* has been considered the finest representative of *B. glabra* because of its free flowering habit and rich coloured bracts.

B. peruviana: The flowers in this species are crowded at the ends of branches as in *B. buttiana.* The floral bracts are rather small, pale magenta pink in colour with a non-pointed apex. Other distinguishing features of this species are the greenish bark covering the branches and the spines which become curved with age. The leaves are like those of *buttiana* in form but of a smaller size.

The two well known varieties of this species are *Lady Hudson* and *Princess Margaret Rose.* The first however is considered to be a hybrid by some people.

B. spectabilis: A species which thrives best when growing freely over tall trees, it makes a pretty sight with its coloured bracts whose shades of magenta purple or red vary with the variety. It appears to flower only in dry weather or in response to dry weather. The bracts are non-pointed at their tips and of a fairly large size. The alternately arranged leaves are more or less oval in shape and with a slightly wavy margin. The plants are spiny and conspicuously hairy over most parts.

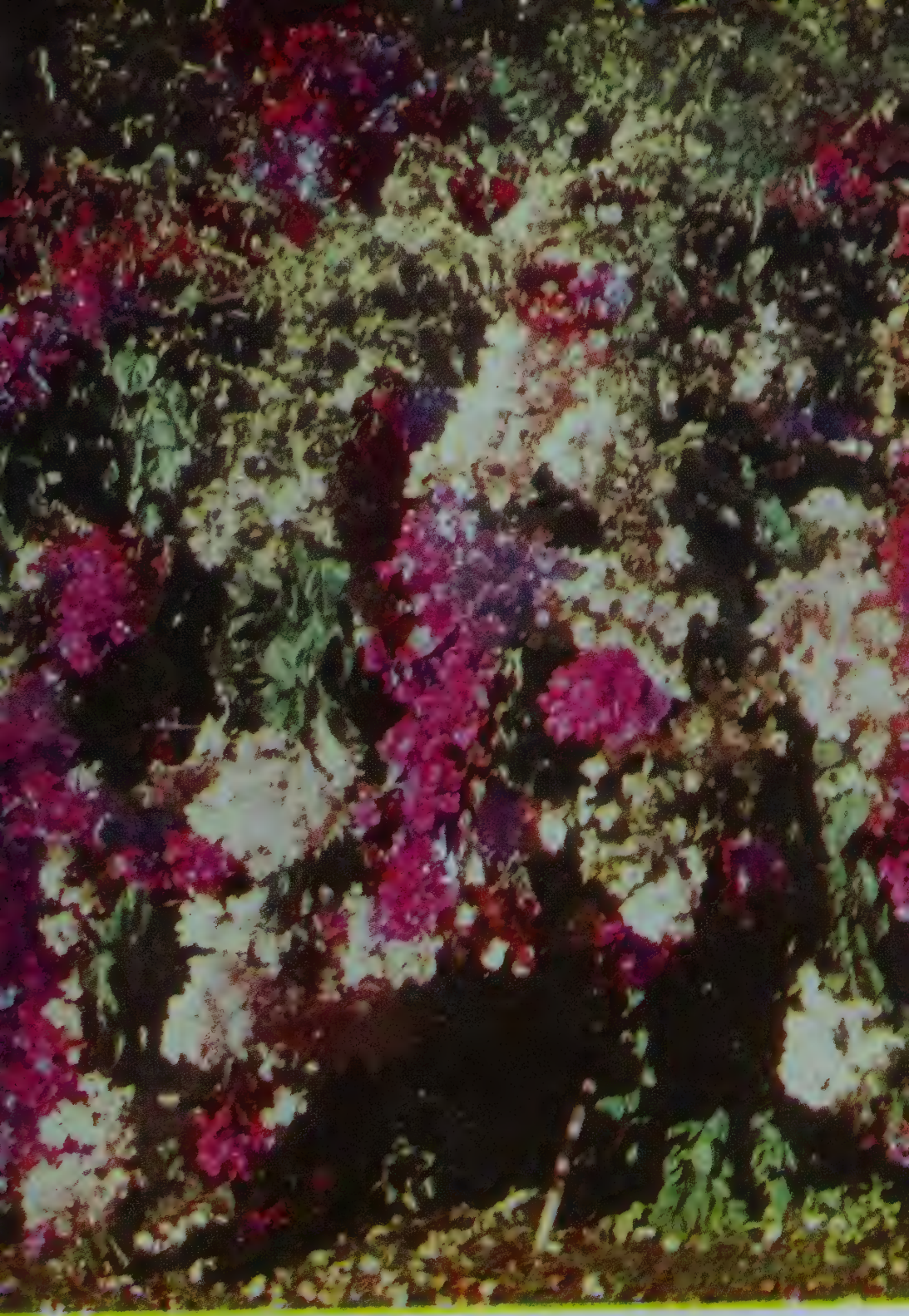
The *spectabilis* varieties which find favour are *lateritia*, *speciosa* and *refulgens*. The bracts of the first variety are described as brick red, jasper red or poppy red fading to brazil red. Both *speciosa* and *refulgens* have very large bracts of a purple mauve colour.

In addition to the numerous varieties referred to above, a number of hybrid *Bougainvilleas* between the different species have been produced in several countries. These including a few from India have been briefly described by Prof. Holttum. Some of these are *Aida*, rose madder to rose Bengal; *Bois de Rose*, soft pink; *Dream*, pale mauve; *Jubilee*, terracotta orange; *Lady Hope*, carmine pink; *Maharaja of Mysore*, Tyrian rose, rose to rose madder; *Meera*, carmine with shading of purple; *Mrs. Buck*, deep rose with a touch of magenta; *Mrs. Fraser*, unusually deep red; *Mrs. Lancaster*, rosy mauve; *Purple Robe*, reddish purple; *Rosa catalina*, bright rosy scarlet; *Rose Queen*, deep crimson scarlet; *Star*, purple to crimson and *Tomato Red*, cherry red. A very recent red variety is *Dr. R. R. Pal.*

Reference has already been made to the white variety *Snow White*. At one time the white *Bougainvillea* was considered to be a myth concocted by fanciful travellers. A variety deserving special mention is *Mary Palmer*. This produces some branches the floral bracts of which are deep rose in colour, some branches which are almost white being lightly shaded with the faintest amber-pink tinge and some branches which are mixtures of these two shades. This variety appears to be a complex chimera and the mixture of the two colours, combined with its very free blooming habit similar to that of *Mrs. Buck* make it a very desirable garden plant. Yet

10. Arrabidaea magnifica

11. Bougainvillea buttiana



12. Bougainvillea var. Mary Palmer

13. Bougainvillea var. Dr. R. R. Pal

another variety worthy of attention is *Enid Lancaster* (this appears to be called *Golden Queen* in southern India and may be the same as *Golden Glow* referred to by Holttum). It has bracts of a deep golden-orange colour which do not fade to pink or light purple as happens with several other varieties of this class.

Although aristocrats among the shrubs of the gardening world, *Bougainvilleas* are quite modest in their requirements; their cultivation neither presupposes a specialised knowledge of floriculture nor demands too much care. They do well in most soils which are well-drained but an ideal compost recommended for them is 3 parts loam, 1 part leaf-mould and sufficient quantity of sand to make for perfect drainage. Occasional applications of fertilizers or, better still, liquid manure are all to the good. A sunny site and watering not too frequently is very much to their liking. Pruning is not very useful in these plants except perhaps to keep them within the limits. Pruning is particularly inadvisable after the end of the monsoon as this would discourage production of flowers.

Most varieties of *Bougainvillea* can be propagated quite easily. Those belonging to the species *spectabilis* however present some difficulty. Both cuttings and layers give good results.

Chonemorpha macrophylla (*C. fragrans*)

C. macrophylla is a climbing shrub which is truly gigantic in its growth habit and suitable for training on the tallest structures. In keeping with its vigour, it produces leaves of enormous size and flowers to match. The flowers white in colour and fragrant are very refreshing, appearing as they do in the hot summer months. They are borne on a repeatedly branched axis to form what the botanists call a cyme. The five petals in each flower are joined to make a long narrow tube at the base but appear free from one another in their more typical form at the top. A much smaller calyx tube not unlike that in the common jasmine encloses firmly the lower part of the corolla.

A more characteristic feature of the plant is its leaves which are remarkable for their size, shape and reticulation. Placed opposite each other, they are broader at the tip than the base and the neatly arranged net-work of veins in them is an artist's delight.

A native of our own country, it has not established itself in many sub-tropical parts of the world. Not very fastidious in its requirements, an ordinary garden soil with sand mixed in it suits it well.

Clematis

The genus *Clematis* includes a very large number of species, and many of these are excellent evergreen climbers, living to a great age, flowering annually for a long period and requiring but little care. *Clematis* also provides rich material for indoor decoration. But being plants of the temperate regions, in India most of the varieties can be grown with rewarding results only at the higher altitudes. Actually, very few are cultivated in India. Outstanding in the colour of their calyx, constituted in most cases of four sepals which take the place of the missing petals, the *Clematis* flowers are assured of a proud position in any garden. There is a tremendous wealth of types available in *Clematis*. Some of the varieties are small-flowered but they make up for this in the prodigal profusion of their bloom. Thus *C. paniculata* with numberless panicles of white fragrant flowers is a well-known plant in Europe and America. *C. montana alba* known in the United States as the Great Indian Clematis is a plant of remarkable vigour, with showy yellow stamens and whitish flowers that change to pink with age. Its native home is in the Himalayas but yet this climber is hardly known to Indian gardeners. Coming to the large-flowered forms, mention must be made first of the purple *jackmani*. This hardy, strong-growing vine bears flowers five inches across, dripping a curtain of rich purple across the walls.

Some of the best known English varieties with different coloured flowers have been listed by Whitehead and include

14. Bougainvillea effectively used to relieve white structures

15. Clerodendron splendens

16. Clerodendron thomsonae

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17. Clitoria ternatea

Fair Rosamond, blush-white; Marcel Moser, mauve and carmine; Nellie Moser, pale mauve and rose; The President, deep violet; Belle of Woking, pale mauve; Lady Northcliffe, lavender; W. E. Gladstone, lilac; Ville de Lyons, bright carmine red; and Duchess of Albany, bright pink. Among others may be mentioned; Mme Edouard Andre, attractive red; Mrs. Cholmondeley, wistaria-blue; and Mme Baron Veillard, a pastel shade of warm lilac-rose. The leaves in *Clematis* are arranged opposite each other in many of the species, their stalks curl around the available support and thus help in climbing. The plants can be arranged to display their charm in a variety of ways; they are equally at home on arbours and pergolas, trellises and walls or old tree stumps.

The centre of origin of *Clematis* is not known but the plants are widely distributed in the temperate regions of the world. In India, as already pointed out, most of the species particularly those producing large flowers are confined to the hill-stations and then too only a very few varieties are grown. Their chief requirement is a rich loamy soil, which should permit free drainage. The soil should be dug deeply, adding well rotted manure and sand to it. Careful training and pruning are of the utmost importance to achieve good results with these plants. Those species which produce their flowers on previous year's growth, such as *C. armandii* and *C. montana*, should not be pruned until the flowering season is over. On the other hand, species like *C. jackmani* and *C. viticella* whose flowers are borne on the current year's growth are often pruned severely in early spring.

Clerodendron splendens

Clerodendron belongs to the same family as the popular garden plant *Verbena*. The genus *Clerodendron* is well represented in Indian gardens because of the great beauty of several of its species which however are not very well defined, there being a lot of confusion about their nomenclature. Some of these are among the most likeable of garden plants and compete with others for pride of place. The most characteristic

features of these plants, whether shrubs or climbers which make it easy to identify them are : the shape of their corolla which is narrowly tubular at the base and cup shaped above; the long stamens which stick prominently out of the flowers; and their beautiful leaves which in most cases are arranged in twos opposite each other. The flowers are in some cases sweetly fragrant, their colour varying with the species. Beautiful as the flowers are, the leaves in some species are no less attractive with their dark green pigmentation, large size and reticulate vein pattern. The two best known climbing species in India are described below :

C. splendens : The plants of this species are relatively dwarf-growing but I have seen specimens which have climbed up to about 15 to 20 feet in height, with considerable lateral spread. This species produces flowers of exceeding beauty which almost hide the handsome leaves when the plant is in full bloom. The dazzling colour is a crimson with a biting touch of vermilion. For the plains of northern India, there are few climbers as excitingly beautiful as this.

C. thomsonae : A native of West Africa, this species is again a fine representative of the genus *Clerodendron*, from the point of view of ornamental appeal. The plant is a tall evergreen climber which produces its numerously lovely flowers, with their white calyces and crimson corollas, during the rainy season; a very elegant and decorative climber.

In India, the species of *Clerodendron* are grown almost throughout the country. The ordinary garden soil suits them well but to achieve very good results, it should be enriched with plenty of leaf mould. The plants need a lot of water during the season of active growth and do better if they are shaded partly. The different species are propagated by means of cuttings, suckers or seeds.

Clitoria ternatea

MUSSEL SHELL CREEPER

C. ternatea is an evergreen twiner which is popular on account of the ease with which it can be grown and the

attractive colour of the flowers. The flowers, deep indigo blue, light purple or white, and with the corolla resembling a butterfly, are extremely pretty, and continue to be produced over most of the year. Further variation in flowers is provided by the presence of beautiful markings on one of the petals and by the occurrence of single and double forms. The leaves divided into five leaflets are alternately arranged. The plant which is neither too large nor too small can be trained with good effect on a trellis work.

India is the native land of *C. ternatea* and wild forms occur in some areas; but it has now achieved a wide distribution in the warmer parts of the world and also to some extent in the temperate regions where it is grown as a greenhouse climber. A light loamy soil is recommended for the plants which are most commonly raised from seeds sown during the rainy season. Notwithstanding their perennial habit, it is usual to treat them as annuals in the garden.

Gloriosa superba

CLIMBING GLORY LILY

G. superba or Glory Lily is a delicate twiner, growing in the garden or in the wild, and as soon as the summer rains start, compels attention and rewards the onlooker with a wonderful display of fragile colourful flowers, pale green leaves and a herbaceous soft stem. Borne on long slender stalks which are curved slightly at their tips, the flowers are made conspicuous, if not charmingly odd, by the six long narrow petals with frilled margins and a changing colour. Pale yellow when the bud first opens, the petals develop a touch of deep orange on their tips which ultimately spreads along their entire length. The flowers have a luminous appearance, reminiscent of lighted Chinese lanterns. Consistent with this oddity is the behaviour of the curved anthers which are completely thrown out of the floral axis, pointing irregularly in all directions. The leaf blades, soft, smooth,

bright and lens-shaped are directly attached to the weak stem and terminate in spiralising tendrils.

The Glory Lily with all its peculiar external features is delightfully different from other climbers; with its soft foliage and flowers which are not too many to lose their individuality, is very restful to the eyes in the hot summer months.

The plant is indigenous to India and a common sight in the countryside during the rainy season. The aerial parts die down with the onset of cold weather, the underground tuberous rhizome remaining dormant during this period. For cultivation in the garden, the selected rhizomes should be potted in the late winter months taking great care of the roots which are easily injured. A good loamy soil, with plenty of peat or leaf mould to make it light, is considered ideal. The plant has to be watered freely during the growing period. Propagation is achieved by seeds also.

Hiptage madablota

MADHAVI LATA

Hiptage madablota is a well-known evergreen climbing shrub, which is noted, above all, for its large size, and which reveals its real beauty during the late winter months when it is laden with large trusses of pleasantly perfumed flowers. In the *Gitagovinda*, the limbs of the beautiful Radha are compared to the flowers of this shrub. The plant, attaining a height of nearly 15 feet and having leaves which are about six inches long and nearly half as broad, takes lot of space and requires a heavy support for climbing. The flowers occurring in terminal and axillary groups are of relatively small size, covered with soft silky hairs on most parts and have a corolla which is constituted of four equal and one very much smaller petal. This latter is of a golden colour in contrast to the white of the other four. Another very distinctive feature of the flowers is that of their ten anthers, one is very much longer than the rest. The dark green leaves, smooth in texture and with long

18. Gloriosa superba

19. *Jacquemontia pentantha*

20. Jasminum grandiflorum

21. Lonicera japonica

pointed tips are arranged opposite each other in pairs, forming a very dense foliage.

H. madablota is indigenous to India and commonly met with in many gardens in the country. The plant is easily propagated by seed or layers and grows well with little care. The soil mixture generally recommended is a good loam with plenty of leaf mould.

Jacquemontia pentantha (*J. violacea*)

J. pentantha is a twining plant which combines in it many of the virtues of the well-known *Ipomeas*—members of the same family, *Convolvulaceae*. The plant produces flowers, which are bell-shaped and of a most beautiful, ultra-marine blue, almost the whole year round. They are not very large but their number makes up for what they lack in size. The leaves in *J. pentantha* are of a distinctive shape, very much broader at the base and tapering towards the tip.

J. pentantha with its small size which makes it an ideal plant to manage, and a great propensity for flower formation, is an obvious choice for trellises and arbours. A native of tropical America, it has now spread very widely. Few climbers grow as readily and under more variable conditions. A well manured compost has been recommended for this plant but its capacity to do well under even the least favourable conditions is truly astounding. Both seeds and cuttings serve equally well for propagation.

Jasminum grandiflorum

THE JASMINE

The numerous species of the genus *Jasminum* are justly famous for their handsome foliage, soft white flowers and above all for the perfume produced from them. The jasmine is specially appreciated in India where most people have a love for fragrant flowers; the fragrance of the jasmine is one of the most prized scents in this country. Few other climbing

shrubs or for that matter plants belonging to any other group bear blossoms with such sweet lingering fragrance. One of the best known species is *grandiflorum* which is popular both as a pretty climber and as a source of the jasmine scent for which it is widely grown, particularly in France. With its active growth habit, the plant spreads easily and produces a large number of white blossoms during the hot summer months. The bright green leaves divided into a number of leaflets are arranged opposite each other and bear short branches in their axils, which terminate in numerous conical buds. The flowers, with their pale green sepals, gripping the cylindrical corolla tube which opens out into a star-shaped arrangement of five petals, are lovely to look at and refreshing to stand nearby.

Northern India is the native home of *J. grandiflorum* but its present distribution includes part of Europe where the climate is mild. The plant is not at all difficult to grow and is best propagated by cuttings of nearly ripe wood or by layers. The fast growing branches however have to be pruned quite severely with the onset of the winter season to encourage floral development in the later months.

Apart from *grandiflorum*, several other species of *Jasminum* enjoy wide popularity. *J. officinale* with its slender stem, shining leaves and fragrant white flowers which occur in terminal clusters, not unlike those of *grandiflorum* though smaller in size, is the common jasmine. *J. sambac* with its double-flowered varieties and commonly known as *motia* or *mogra* is a shrub which, however, can be trained as a climber. A pleasant contrast to the white-flowered species is provided by *J. humile* which bears bright yellow flowers which are mildly fragrant. *J. primulinum* has large yellow flowers which are very attractive, but unfortunately there is no scent. There are numerous other species some of which are very attractive but the nomenclature of these is rather in a confused state and it is difficult to obtain authentically named specimens in this country.

Lonicera japonica

L. japonica or Japanese Honeysuckle as it is commonly known is a favourite in most Indian gardens because of its exceedingly beautiful and sweet-scented flowers which are produced in such large numbers during the winter months. The plant rambles extensively and displays its beauty to the best advantage if allowed to grow on a trellis-work or on small trees. The flowers, white at first and turning yellowish later, are arranged in pairs in the axil of leaves, the corolla taking the form of a narrow slender tube which opens out into two unequal lips. There is a variety cultivated in the hill stations which does not show any yellowness but is flushed with reddish crimson. The male and female parts remain sufficiently apart from each other and thus ensure cross pollination which is further helped by the glandular secretion at the base of the flowers for attracting insects. The attractive flowers are set off in their loveliness by the green leaves with whitish undersides which are arranged opposite each other, too close to the stem to be properly petioled. There is a variety reported by Firminger, *aurea reticulata*, which has very beautiful yellow-netted leaves.

L. japonica as its name implies is a native of Japan as well as of nearby China, but it is now widely distributed in India. The plant is easy to grow and propagate, requiring hardly any special attention. The climbing species of this genus unlike the bushy ones are best kept out of too much sun and should be watered well. Layering and cuttings are both very effective for rapid propagation.

A second species, *Lonicera sempervirens* or Trumpet Honeysuckle as it is popularly called, is also very well-known because of its scarlet but scentless flowers which occur in large clusters.

Pharbitis purpurea (*Ipomea rubro-caerulea*)

HEAVENLY BLUE DAY GLORY

The Morning Glories and the Day Glories constitute some of our most charming climbers. This group of plants includes

both perennial and annual forms; some are tuberous-rooted while many others have fibrous roots. Every one has heard of the Japanese Morning Glories. This flower has been glorified in Japan, and plant breeders have produced an astonishing range of forms varying from varieties with small flowers to others with blooms as much as eight inches across; some are frilled, some are streaked and altogether the array of forms is dazzling.

While the Morning Glory opens early in the day and closes relatively quickly, there are forms which keep their blooms open for the greater part of the day. These are sometimes referred to as the Day Glories.

Pharbitis purpurea, commonly known as the Heavenly Blue Day Glory, is one of the best which is usually sown in July-August and produces masses of large exquisitely beautiful flowers, reminiscent of the firmament on a clear spring day. Another attractive way of growing this variety is to plant it on stakes of bamboos about eight feet high, to which cross-bars of about $2\frac{1}{2}$ feet across have been nailed; for this purpose the sowing should be done at the end of August in order to limit the growth. The effect of such a planting is enhanced if Heavenly Blue is alternated with another attractive climber, *Mina lobata*, described on the next page. The Heavenly Blue Day Glory is easily propagated from seeds and is best grown as an annual.

Another attractive Day Glory is one which is named as *Scarlett O'Hara*. This has flowers of an attractive clear light red. Another variety is *Pearly Gates* which is almost white in colour. Numerous other forms occur, some of these bloom at night; one of the latter is sometimes called the Good Night Flower — its scented flowers open late in the evening and close before dawn.

Ipomea horsfalliae with its sparkling crimson flowers provides a beautiful contrast to other members of the group. Though popular in Mysore and Madras, it is not so well known in the north of India. In Delhi, the low temperature prevents the opening of the buds which are produced in the early cold

22. Lonicera sempervirens

23. Pharbitis var. Cornell

weather. This species however is difficult to propagate and the usual practice is to graft it on the roots of some others of the genus.

Pharbitis leari (*Ipomea leari*) is said to have been introduced from Buenos Aires. This is a magnificent climber, capable of covering a large space and providing a wealth of large beautiful blue flowers, somewhat similar to those of Heavenly Blue.

Ipomea palmata is grown because of its easy luxurious growth and delicate short-lived flowers, which blooming in the morning, serve to relieve the drabness of many a railway platform in the country. Its common name of Railway Creeper is based on these associations with time and place. The plant is an evergreen perennial shrub which continues to produce flowers almost the whole year round. The flowers, soft and salver-shaped, are a shade of light purple and occur in clusters of 2–3. With its numerous flowers and refreshingly green leaves which are deeply incised into lobes of different sizes, the plant lends itself to decorating the house or beautifying the garden in a variety of ways. However, it is too common a subject to attract the attention of the connoisseur, especially as many more handsome climbers are available.

The origin of *I. palmata* is rather obscure but it has very wide distribution in the tropical and subtropical parts of the world. The plant is one of the easiest to cultivate, a fact which is largely responsible for its popularity. Ideally it is grown in a rich loamy soil with a lot of water and plenty of sunshine. It has however a tremendous capacity to do well under adverse conditions. Propagation is done mostly by cuttings or layers and rarely by seeds.

Yet another species of *Ipomea* which can be relied upon to produce a most colourful effect is *Ipomea versicolor* or *Mina lobata* with which it is synonymous. Its flowers, bright crimson to begin with gradually change to yellow — a behaviour reminiscent of some other plants. They do not however differ much in their form from those of other species, except that the tubular part of their corolla appears to be somewhat

blown up. Their stamens protruding very much out, identify *versicolor* from other popular species.

Passiflora racemosa

PASSION FLOWER

The genus *Passiflora* comprises a group of plants, which is known as much for the great beauty of several of its members and the delicately flavoured fruits which some of the species produce, as for its legendary significance. Few among these however can stand comparison with *P. racemosa* as a garden climber of surpassing charm. The plant produces deep red flowers in gay abundance during the hot monsoon days; these having a structure which has much to do with their popular name. Some of the more zealous and imaginative of the early missionaries in South America, saw in their form a representation of the implements used in the crucifixion of Christ and proposed the name passion, meaning suffering, which these indicated. The flowers are borne singly in an alternate arrangement on short floral branches which are visibly bent with their weight. The flowers, apart from having five sepals and an equal number of petals, also possess a triple ring of slender out-growths variously described as rays, processes or filaments, constituting together what is known as the corona, which lies between the essential and non-essential parts of the flower. In this particular species, the deep red colour of the petals is pleasantly contrasted with the colour of the corona filaments which are white on the upper side and blue on the lower. The leaves in *P. racemosa* are three-lobed, charmingly green in appearance and with tendrils in their axils, which help the plant to climb easily, making it an excellent decoration for walls, arches, etc.

Like all other passion flowers, the species *racemosa* has its native home in S. America but is now cultivated widely in tropical and sub-tropical parts of the world and commonly met with in Indian gardens. The ordinary garden soil not too rich in manure suits them well, provided there is plenty

of watering and free drainage. When the flowering is over, the plant is thinned out and shortened to encourage vegetative growth and flowering for next year. Propagation is done by means of seeds or layers.

A second species of *Passiflora* which is considered by many to be even more beautiful than *racemosa* is *caerulea* or the Blue Passion Flower. This is an evergreen climber with an immense capacity for growth with the result that it can attain a good height and cover a large area. The large flowers with their whitish green sepals and petals, and corona whose rays are purple, white and blue in parts, are most showy and make the plant so very popular. They are also deliciously scented. It is readily propagated by seed, cuttings or layers.

Petrea volubilis

THE PURPLE WREATH

P. volubilis or Purple Wreath is a most beautiful shrubby climber with a wealth of elegant flowers, whose exquisite light mauve colour goes very well with their soft silken look. The flowers are attractive enough individually but arranged together on short floral branches, as they are found in nature, their charm is even greater. The part of the flower that excites this admiration however is not the corolla which is literally dwarfed by the mauve star-shaped calyx. The short petals are of a much deeper colour and surrounded completely by the sepals, give the impression of two types of flowers, one superimposed on the other. The impression however is short lived as the calyx persists for a much longer time than the corolla. The leaves of *P. volubilis*, large in size and rough in texture, are arranged in twos opposite each other. A further distinguishing feature of the plant is its grey bark. Flowering in early spring, the plant is commonly grown as a climber but it also lends itself to training as a standard.

Tropical America is the homeland of *P. volubilis* from where it has spread to other parts of the tropics. The plant is best grown in rich garden soil and easily propagated by means of

cuttings, layers or suckers. The cuttings are taken from the dormant wood when it is beginning to put up new growth and planted in sandy soils.

In the plains of northern India where *Wistaria* does not flower very well, *Petrea* is an excellent substitute. In fact many people mistake this plant, when in bloom, for the *Wistaria*. There is no doubt that a mature plant of *Petrea* with its large trusses of the loveliest colour provides a most enchanting spectacle.

Porana paniculata

BRIDAL BOUQUET OR "SAFED BEL"

Porana paniculata is a woody twiner whose white flowers though very small, occur in such profuse abundance on closely-grouped floral axes that they manage to produce a most showy effect. Their fragrance moreover is an added attraction. The plant with its shrubby habit and vigorous growth is usually trained on pillars and similar structures. Each individual flower has a characteristically funnel-like corolla, narrow and tube-like at the base, wide and cup-shaped above. The leaves are dark green in colour, large in size, and more or less heart-shaped in appearance, with a very pointed apex. They are of a rough texture and alternately arranged on a stiff stem, giving the plant a somewhat coarse look when it is not in bloom.

The native home of *P. paniculata* is not known for certain but it is on record that this, as well as the two sister species *P. racemosa* and *P. volubilis*, found their way into Europe and in several other countries of the world from India, more than a hundred years ago. A compost of sandy loam and leaf mould has been particularly recommended for these plants. They are easily propagated by cuttings.

Quisqualis indica

RANGOON CREEPER

Q. indica is one of the better known garden climbers and although its name is reported to have been coined to express

24. Ipomea versicolor

25. *Passiflora incarnata*

26. Passiflora racemosa

27. Petrea volubilis

astonishment at its odd behaviour, the plant evokes wonder and admiration more than any other emotion. Also known as the Rangoon Creeper, its flowers are a rare combination of deep reddish pink, soft texture and rich perfume. As the flower colour develops gradually, the five petals being almost completely colourless at the time of opening of the bud, both the reddish pink and white flowers are often present together, a fact which further enhances the beauty of this evergreen climber. The flowers are produced in large groups almost throughout the year and one of their most characteristic feature is the unusually elongated calyx tube which is apt to be mistaken for a true stalk. The so-called odd behaviour of the plant is reflected in its peculiar growth habit, its curved spines which enable it to climb in the absence of tendrils, and in its changing flower colour. The leaves in this, as in many other climbers, are arranged in twos, and with their fresh green appearance, set off the flowers to a perfect display. The plant with its large size and woody stem is best trained on a trellis work or on a tree.

There is a variety available which keeps the red colour of its flowers throughout. There is also a variety, not widely known but quite beautiful, which is practically pure white. In other respects it is like the common *Quisqualis indica* and also retains the lovely fragrance of the latter. There is also a variety, *Quisqualis malabarica*, which has smaller flowers than the common type.

The eastern home of *Q. indica* is Malayasia but the plant is also known to be indigenous to parts of Africa. Its wide distribution covers many tropical and sub-tropical parts of the world and it is a common feature of many Indian gardens. The plant does well in light soils and it is usual to prune it severely after the more profuse flush of flowering is completed. Propagation can be achieved in a variety of ways, more commonly with cuttings but also by means of layers or by planting out parts of the root.

Climbing Roses and Ramblers

It has been said of the rose that, " It fills every requirement for the perfect flower. Its virtues have been sung by poets throughout the ages as well as by flower girls in our streets. It is beloved by everybody. It is grown everywhere from the gardens of the palace to the walls of a white-washed cottage, from the bed in front of a suburban villa to the formal sunken garden of an ancestral mansion".

When one thinks of a rose garden, in this country, however, one usually thinks of the bush roses and the standards. But, the genus *Rosa* includes also many beautiful forms which climb or ramble. It is usual to apply the term rambler to those forms which produce large clusters of small flowers, something like the flowers of a Polyantha rose. The name climber on the other hand is usually applied to those climbing roses which produce flowers singly or in twos or threes (in a few cases larger clusters may be produced). From time to time, some of the well-known bush varieties give rise to a climbing " sport ". From this is originated a climbing rose which otherwise retains all the characteristic points of the plant of the parent stock from which it arose.

There are many wild species of climbing roses to be found especially in the cooler regions of the world including the Himalayas. Many of them are quite ornamental with abundant blossom, and some of them have beautiful fruits or " hips " which turn orange or red in colour on ripening. It has been shown that these are a rich source of vitamin C. However, there is no doubt that with the wealth of climbers and ramblers produced by the rose breeders, it is seldom that the wild roses are made use of except in large parks.

Some roses such as *American Pillar* have only a limited capacity for climbing: these are called pillar roses and they are very useful for clothing a pillar or a fence with exquisite bloom. As just mentioned, there is a large wealth of climbing and rambling roses available. These are placed in various species or groups by the botanist. To give an account of these would occupy much space and probably would not interest

the average gardener very much. In India it is necessary to consider roses for the hills and the plains separately.

In the hills, the ramblers grow to perfection and indeed part of the charm of our hill stations in early summer is the riot of colour which these lovely plants exhibit. A few of the well-known names of ramblers, both old and new are: *Tausendschon*, *Dorothy Perkins*, *Evangeline*, *Hiawatha*, *Mermaid*, *Blaze*, and *Paul's Scarlet Climber*. Some of the climbers also do well in the hills.

In the plains on the other hand the ramblers disappoint. They produce a lot of vegetative growth, but may not flower at all. If they do flower, the quantity of bloom is limited and is produced at a time when hot winds scorch the delicate petals: at least this is the case in the plains of northern India. Of the climbing varieties also, only a very small number, under plains conditions, produce sufficient bloom to justify their cultivation. Pride of place, in the plains, must perhaps be given to the beloved old yellow variety, *Marechal Niel*. This rose is most dependable as it produces two or three flushes of well-shaped golden-yellow flowers exhaling a most delicious fragrance. Another variety which is dependable is the one called *Lamarck*. This produces white flowers, slightly tinted with cream, in quite large clusters. The flowers have a light but pleasant perfume.

Another variety belonging to a different class is *Prosperity*. This produces large trusses of very double white flowers, tinted light pink in the bud. Yet another good climber of the same group is *Penelope*. When first opening it shows a delightful shade of salmon pink but rapidly bleaches to white. Its musky perfume carries over a wide distance.

Generally speaking, climbing roses and ramblers may be grown in the same way as bush roses. But as regards pruning they require different treatment. In the case of climbers, it is sufficient to cut out dry and twiggy growth and to do enough thinning to keep the plants within bounds and in good shape. In the case of ramblers and special types like *Prosperity* and *Penelope* the old stems which have finished

flowering should be cut out from the base as these will not flower again.

Climbing roses and ramblers may be propagated in the same way as bush roses. In a few cases cuttings are successful, but for most varieties it is advisable to bud or graft the desired variety on a suitable stock. In the plains of northern India, *Edouard* is the stock commonly employed. In Bihar and Bengal a briar stock is used and it is wiser to go by local experience in the matter.

Solanum wendlandii

The genus *Solanum* which contains some important vegetables like the potato and the brinjal, also provides a number of beautiful garden plants including some climbers. Of these, *S. wendlandii*, a relatively recent introduction in this country is undoubtedly the most beautiful. A tall climber, it has an imposing appearance with its large lilac blue flowers which are assembled on repeatedly branched floral axes, bending down with their weight. Very regular in their form, each flower is constituted by a very short calyx and a rather large paper-thin corolla which has its five lobes very much spread out as if stretched mechanically. The leaves in *S. wendlandii* are variously clefted and alternately arranged, and with their brilliant green colour provide an excellent background for the flowers to display their beauty.

The plant is a native of Costa Rica but adapted to do well in most tropical and sub-tropical parts of the world. In India, it appears to succeed best in our hill stations and in cool portions of the Deccan tableland. It can be multiplied by seed or more easily by cuttings taken from ripe wood and planted in a sandy soil. It has been known to grow well under a variety of conditions, although it has been suggested that it prefers partial shade.

A second species of *Solanum* which is also a popular climber is *jasminoides* or the Potato Vine producing star-shaped flowers of faintly bluish white colour in large clusters throughout the summer months.

28. Quisqualis indica

29. A deep pink rambler rose

30. A light pink rambler rose

31. Solanum jasminoides

Yet another species, *S. seaforthianum* has clusters of pretty purple flowers and is succeeded by crimson berries.

Strophanthus gratus (*Roupellia grata*)

CREAM FRUIT TREE

The family Apocynaceae, the very soul of generosity, has presented us with a group of climbers which include such gems as *Allamanda* and *Beaumontia*. A worthy member of this distinguished group is *Strophanthus gratus*. This climbing plant is at its best as a scandent shrub, producing white-coloured flowers with a touch of pink borrowed from the rose. The blooms, large and sweetly fragrant, are produced in closely grouped clusters during the hotter part of the year. In addition to the petals, which are attractive enough, the five lobes of the corolla open out broadly displaying with good effect the pink corona. The leaves in *Strophanthus*, arranged opposite each other, present a deeply green and brightly polished appearance. The plant, growing freely as it does, requires lot of space and a large garden is often necessary in order that it may be in harmony with its surroundings. When such facilities are not available severe pruning is commonly practised.

The species is a native of Western Africa from where it has migrated to the other hotter regions of the world. Its cultivation presents no special problem, the ordinary garden soil mixed with sand and leaf mould meets the requirements. The plant also needs liberal irrigation during the summer months. It is propagated by cuttings planted during the rainy period.

Tecomaria capensis (*Tecoma capensis*)

This genus belongs to a group well known for its many garden plants, some of which are erect shrubs, others climbers of a most showy type. The species *capensis* belonging to the latter group comprises rambling plants, whose exquisite flowers and lovely green leaves make them a "must" for the connoisseur in this line. The orange-coloured flowers have a

long tubular corolla which appears somewhat inflated at the tip before it bursts open into four lobes, one somewhat more prominent than the others. The clustering of the flowers on short terminal branches is responsible for the effect which makes these plants so desirable. The leaves in *Tecomas* are fully in keeping with their attractive blossoms. Divided into a number of leaflets having toothed margins and with their clear green colour, they are most refreshing to look at. Flowering almost throughout the year, the plant can be trained on verandah walls or arbours and by careful pruning it can even be grown as a shrub.

The native home of *T. capensis* is believed to be S. Africa but its present distribution is world-wide. *Tecomas* require a rich soil of light type which permits free drainage. They should also be kept well exposed to sunlight and given lots of water. The plant is propagated by means of cuttings taken from wood which is not too ripe.

Another species formerly placed under *Tecoma* which deserves particular mention is *Campsis chinensis* (*Tecoma grandiflora*). With its deep orange-coloured flowers which are produced in great profusion, the plant presents a very pretty sight especially when grown on a tree or a shrub. The corolla in this case is characterised by very much broader lobes and a short tubular base. One drawback, however, of this species is that where the winter is severe it sheds its leaves during the cold season, exposing its bare stems. It is easily propagated from the suckers which spring up near the base of the plant. Yet another climbing species is *Pandorea jasminoides* (*Tecoma jasminoides*) which is remarkable for its neatly arranged beautiful leaflets and rosy white flowers. This is propagated by cuttings made during the rains. Many beautiful specimens of this plant can be seen in Bangalore.

Thunbergia grandiflora

T. grandiflora is a plant which combines in it many of the qualities of a good climber: lovely flowers, a hardy perennial growth habit, dense foliage and an ability to do well under

conditions which are not too difficult to provide. Leaves however tend to be coarse in most *Thunbergias*. Its name of Heavenly Blue is based on its sky-coloured sparkling blossoms. The plant with its extensive growth, forms a curtain of dark green foliage which serves admirably as a cover for walls, trees, etc. The flowers, with their large five-lobed corolla, are produced on terminal floral branches and less often in the axils of leaves on the main axis. Apart from their predominantly blue colour, the petals are beautified with a touch of white and a touch of yellow in the short tubular part of the corolla and at the base of the five lobes. Surrounding the flowers completely before they open, are two fleshy green bracts which appear to take the place of a very much reduced calyx.

The leaves of *T. grandiflora* are pointed at the tips and very much broader at the base, so that they are easily recognised as heart-shaped. Dark green with age, they are arranged opposite each other and their large blades attempt somewhat unsuccessfully to divide into a number of lobes.

The original home of this climber is Eastern India but it has established itself successfully in many parts of the world. As the most characteristic feature of the plant is its extensive growth, a close and careful pruning is required to make it flower easily. Like all *Thunbergias*, the species *grandiflora* grows to perfection in a fibrous loam enriched with manure. Under Indian conditions, the plant requires plenty of watering. As the roots take up a lot of space, *Thunbergias* are seldom grown in pots. They are easily propagated by seeds or by cuttings and layers during the rainy season.

Apart from *grandiflora* the genus includes several other species which are handsome climbers or shrubs. An annual climber with several varieties having yellow or white flower) with a purple or blackish eye in the centre (Black-eyed Susan) is *T. alata*. *T. fragrans* with snow-white flowers is another annual species whose plants are usually grown in pots. Two more species which, however, are almost as extensive in their growth as *grandiflora* are *mysorensis* and *laurifolia*, the first having large racemes of beautiful flowers combining various

shades of orange, yellow, red and purple; the second differs from *grandiflora* in having smaller leaves and flowers which are more deeply blue.

Trachelospermum jasminoides (*Rhyncospermum jasminoides*)

T. jasminoides is a delicately-formed climbing shrub whose pure white, deliciously fragrant flowers make it a most desirable plant to have about the house. Laden with myriads of jasmine-like blossoms in the hot summer months, the plant is refreshing to behold and revives the spirits. An evergreen climber, it makes a reasonable amount of growth. In view of its free-growing habit and pretty foliage, the plant is trained by some in the form of a compact bush. The flowers borne on long peduncles have five sepals which are small and spread out, and a corolla with a short tubular base and a star-shaped upper portion which is irregular, but artistically so, in its outline. The leaves, which are dark green and smooth with beautifully patterned veins are shortly petioled and arranged opposite each other.

Originally from China, *T. jasminoides* is so well adapted to our conditions that India may be considered its second home. Although the plant is not very sensitive in the matter of its soil requirements, it takes several years to develop a good size specimen. Propagation however is easily done by cuttings of half ripe wood or by means of layers during the rainy season.

A great merit of this climber, which belongs to the Apocynaceae, a family characterised by milky juice which exudes wherever the plant is wounded, is its ability to thrive in shady positions.

Wistaria sinensis (*W. chinensis*)

THE GRAPE FLOWER VINE

Wistaria is a name to conjure with. It is often considered to be the Queen of Flowering Vines. It is a woody climber

32. Solanum seaforthianum

33. Solanum wendlandii

34. Strophanthus gratus

35. Campsis chinensis

which can also be grown as a miniature tree because of its extensive growth habit, dense foliage and the thickness and height of its stem. The aggregation of flowers with their lovely colour on long drooping floral branches makes the *Wistarias* most attractive, all the more so because of the harmonising effect of the alternately arranged long compound leaves having 7–11 silky-haired beautiful green leaflets. It is difficult even to imagine a spectacle more enchanting than these plants in the summer months, covered almost completely by a canopy of literally thousands of blossoms. No wonder that the *Wistarias* have been considered as the pride of formal gardens. The corolla has a form which the botanists call papilionaceous, that is, like a butterfly; this type of flower is also found in the common garden sweet pea.

The *Wistaria* with its stem thickness of up to 8 inches in diameter and a height which may in extreme cases reach over 100 feet or more, is not suitable for training on a trellis work. It is best to have it on walls, porches or on tall trees. Even this arrangement may present a space problem and severe pruning is often necessary. To grow the plant as a shrub, it is usual to cut it a little above the ground level, which results in reduced vegetative growth and an increased capacity for flower formation. The plant can also be grown as a standard by careful pruning.

The genus has two important species. 1. *Wistaria sinensis,* the Chinese Wistaria, characterised by large fragrant flowers in compact clusters of medium length. They come into bloom when very young and all the flowers in each cluster open at about the same time before any leaves appear. 2. *Wistaria floribunda,* which is better known as *Wistaria multijuga* or Japanese Wistaria, has long slender racemes of smaller flowers. Those at the top are fully open while the lower ones are only small unopened buds. This of course lengthens the blooming period until the leaves are pretty well out.

There is a much wider variety than is generally thought. Some of the best varieties of *Wistaria floribunda* listed by nurseries in America are given below:

Issai : This is a very fine, entirely distinct variety having many excellent qualities. Flowers a clear purple, much deeper colour than in the common Japanese and are borne very profusely. It is also decidedly precocious, coming into bloom very young. The short, silky seed pods hang on all winter if not cut off, and are quite ornamental.

Rosea (Pink Wistaria) : This is a very fine Pink Wistaria. Clusters about 15 to 18 inches long. Slow to commence flowering but once started it blooms profusely.

Violacea plena (Double Violet Wistaria) : They are exactly like dark-coloured purple violets borne in clusters about 15 to 18 inches long. Very free bloomer.

Longissima : Extra-long-clustered Wistaria. Lavender blue. Clusters well over four to six feet long.

Longissima alba : A perfectly beautiful pure-white form of the above variety.

Geisha : A very charming variety. The clusters as well as the individual flowers are smaller than usual, but very prolific. The effect is delightful and charming. Colour a clear light lavender; very free flowering.

Royal Purple : Brilliantly coloured, good-sized clusters of royal purple; flowers are freely produced, making this one of the fine and outstanding varieties.

W. sinensis (Chinese Wistaria) : This is the old favourite called Chinese Purple, but really lavender shaded blue.

Sinensis alba (White Chinese Wistaria) : Has white fragrant flowers.

Venusta violacea : Brilliantly coloured, good-sized clusters of royal purple; flowers are freely produced, making this one of the fine and outstanding varieties.

The *Wistaria* is now widely grown in Europe and America. In India, the plant is grown mostly in hill stations or places in the sub-montane regions like Dehra Dun; it has been found to flower successfully at Chandigarh. It is reported that it does not flower well in places like Calcutta.

The plant thrives on a good loamy soil and there is hardly any need for adding nitrogenous fertilizers. A dressing of

36. Pandorea jasminoides

37. *Thunbergia grandiflora*

38. Trachelospermum jasminoides

39. Wistaria sinensis

superphosphate dug deep into the soil is however recommended to encourage flowering. The application of fertilizers is recommended to be done just before the dormant period as this promotes production of flowers. Severe pruning is also absolutely essential to encourage floral development, once in the winter, and, if necessary, later also. For the best results, *Wistaria* must be so placed as to receive full sunshine.

Layering is the most satisfactory method for the propagation of this plant.

Botanical name	Common name	Flower colour
Aganosma caryophyllata	Malati Lata	White
Allamanda cathartica	....	Yellow
var. *schottii*	....	Yellow
var. *violacea*	....	Pale purple
Antigonon leptopus	Sandwich Island Climber	White to deep pink in different varieties
Antigonon guatemalense	....	Rose colour
Aristolochia elegans	Birthwort	Combination of purple and white
Arrabidaea magnifica	....	Rosy purple
Banisteria laevifolia	....	Yellow
Beaumontia grandiflora	Nepal Trumpet Climber	White
Bougainvillea buttiana	....	Various shades of white, orange, pink, scarlet, crimson, and purple depending on the variety
Bougainvillea glabra	....	
Bougainvillea peruviana	....	
Bougainvillea spectabilis	....	
Campsis chinensis	....	Orange
Chonemorpha macrophylla	....	White with yellow centre
Clerodendron splendens	....	Scarlet
Clerodendron thomsonae	....	Combination of red and white
Clitoria ternatea	Butterfly Pea	White, purple, blue
Clytostoma binatum	....	Purple
Clytostoma callistegioides	....	Yellow
Doxantha unguis-cati	....	Yellow
Gloriosa superba	Climbing Glory Lily	Deep yellow and red
Hiptage madablota	Madhavi	Yellow and white
Ipomea horsfalliae	....	Crimson
Ipomea palmata	Railway Creeper	Light purple
Jacquemontia pentantha	....	Deep blue

CHARACTERS OF CLIMBERS

Time of flowering	Light or heavy	Common method of propagation	Other information
R	Heavy	Cuttings	Intensely fragrant
A	Light	Cuttings or layers	Lightly scented
A	Light	Cuttings or layers	
A	Light	Cuttings or layers	
A	Heavy	Seeds	
A	Light	Seeds	
H, R	Light	Seeds, cuttings, layers	
H	Heavy	Layers including gooty	
W	Heavy	Layers	
W	Heavy	Cuttings or layers	Faint lily-like fragrance
W	Heavy	Cuttings or layers	
A	Light	Cuttings or layers	
A	Heavy	Cuttings or layers	
A		Cuttings or layers	
R	Light	Suckers	
R	Heavy	Cuttings	Fragrant
W	Light	Cuttings, suckers or seeds	
A	Light	Cuttings, suckers or seeds	
A	Light	Seeds	
A	Light	Layers including gooty	Lightly scented
A	Heavy	Layers including gooty	
W	Heavy	Layers including gooty	
R	Light	Planting of tuberous rhizomes	
W	Heavy	Seeds, layers	Strongly scented
W	Heavy	Grafts, layers	
A	Heavy	Cuttings, layers	
A	Light	Terminal cuttings	

TABLE SHOWING SOME IMPORTANT

Botanical name	Common name	Flower colour
Jasminum grandiflorum	Jasmine	White
Jasminum humile	Yellow Jasmine	Yellow
Jasminum officinale	....	White
Jasminum primulinum	....	Yellow
Jasminum sambac	Motia or Mogra	White
Lonicera japonica	Japanese Honeysuckle	White and cream
Lonicera sempervirens	Trumpet Honeysuckle	Orange scarlet
Pandorea jasminoides	....	Rosy white
Pharbitis leari	....	Purplish blue
Pharbitis purpurea	Heavenly Blue Day Glory	Sky blue
Passiflora caerulea	Passion Flower	Blue
Passiflora racemosa	Passion Flower	Vivid scarlet
Petrea volubilis	Purple Wreath	Light purple
Porana paniculata	Bridal Bouquet	White
Porana racemosa	Snow Creeper	White
Pyrostegia venusta	Golden Shower	Orange
Quisqualis indica	Rangoon Creeper	White turning red
Rosa spp. (*R. wichuraiana*, *R. multiflora*, Noisette Roses, etc.)	....	Numerous shades of white, pink, yellow, orange and red
Solanum jasminoides	Potato Creeper	White
Solanum seaforthianum	Blue Potato Creeper	Light purple
Solanum wendlandii	Potato Climber	Lilac blue
Strophanthus gratus	Cream or Fruit Tree	Cream tinged purple
Tecomaria capensis	....	Orange scarlet
Thunbergia grandiflora	....	Mauve
Thunbergia mysorensis	....	Yellow, red and purple
Trachelospermum jasminoides	Star Jasmine	White
Wistaria sinensis	Grape Flower Vine	Shades of white, pink, mauve and purple
Wistaria floribunda	....	

A = Several flushes in a year; H = Hot season;

CHARACTERS OF CLIMBERS

Time of flowering	Light or heavy	Common method of propagation	Other information
H	Heavy	Cuttings or layers	Very fragrant
W	Heavy	Cuttings or layers	Mildly fragrant
R	Heavy	Cuttings, layers	Strongly fragrant
W	Heavy	Cuttings, layers	
A	Light	Cuttings, layers	Very fragrant
W	Light	Cuttings, layers	Deliciously fragrant
W	Light	Cuttings, layers	
A	Light	Layers	
A	Heavy	Division	
R	Light	Seeds	Annual
H	Heavy	Seeds, cuttings, suckers	Deliciously fragrant
H	Heavy	Seeds or layers	
W	Heavy	Layers	
W	Heavy	Cuttings, layers	Scented
W	Heavy	Cuttings, layers	
W	Heavy	Layers including gooty	
A	Heavy	Layers or cuttings	Beautifully scented
H, A	Light	Budding, grafting	Some varieties are scented
H	Light	Seeds, cuttings, layers	
A	Light	Seeds, cuttings, layers	
H	Heavy	Seeds, cuttings, layers	
H	Heavy	Layers	
	Light	Seeds, cuttings	
A	Heavy	Layers	
W	Heavy	Layers	
H	Light	Layers, cuttings	Highly scented
H	Heavy	Layers	Scented
H	Heavy	Layers	Scented

R = Rainy season; W = Winter season.

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